

What is claimed is:

1. An encrypting apparatus using an encryption key contained in an electronic watermark, said apparatus comprising:

generating means for generating a first electronic watermark which
5 contains a first encryption key;

electronic watermark inserting means for inserting said first
electronic watermark containing said first encryption key into a first portion
of data; and

encrypting means for encrypting a second portion of said data with
10 said first encryption key.

2. The encrypting apparatus as set forth in claim 1,

wherein said electronic watermark generating means generates a
second electronic watermark which contains a second encryption key,

15 wherein said electronic watermark inserting means inserts said
second electronic watermark into said second portion before said encrypting
means encrypts said second portion with said first encryption key, and

wherein said encrypting means encrypts a third portion of said data
with said second encryption key.

3. The encrypting apparatus as set forth in claim 1,

wherein said electronic watermark generating means generates an n-
th electronic watermark which contains an n-th encryption key, where n is
an integer larger than one,

wherein said electronic watermark inserting means inserts said n-th electronic watermark into n-th portion of said data before said encrypting means encrypts said n-th portion with an $(n - 1)$ -th encryption key, and

wherein said encrypting means encrypts an $(n + 1)$ -th portion of said data with said n-th encryption key.

4. The encrypting apparatus as set forth in claim 1, further comprising: compressing means for compressing said data.

5. The encrypting apparatus as set forth in claim 4, wherein said compressing means compresses said data before said data is encrypted.

6. The encrypting apparatus as set forth in claim 1, wherein said data contain at least one of video data, audio data, and character data.

7. The encrypting apparatus as set forth in claim 1, wherein said first portion and said second portion are output to the same medium.

8. The encrypting apparatus as set forth in claim 1, wherein said second portion is output to a medium different from a medium to which said first portion is output.

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9. The encrypting apparatus as set forth in claim 1,
wherein said first portion contains a commercial.

5 10. A decrypting apparatus using an encryption key contained in an
electronic watermark, said apparatus comprising:
electronic watermark detecting means for detecting a first electronic
watermark from a first portion of data;
encryption key extracting means for extracting a first encryption key
10 from said first electronic watermark; and
decrypting means for decrypting a second portion of said data with
said first encryption key.

11. The decrypting apparatus as set forth in claim 10,
15 wherein said electronic watermark detecting means detects a second
electronic watermark from said second portion decrypted with said first
encryption key by said decrypting means,
wherein said encryption key extracting means extracts a second
encryption key from said second electronic watermark, and
20 wherein said decrypting means decrypts a third portion of said data
with said second encryption key.

12. The decrypting apparatus as set forth in claim 10,
wherein said electronic watermark detecting means detects an n-th

electronic watermark from an n -th portion of said data decrypted with an $(n - 1)$ -th encryption key by said decrypting means, where n is an integer larger than one,

wherein said encryption key extracting means extracts an n -th
5 encryption key from said n -th electronic watermark, and

wherein said decrypting means decrypts an $(n + 1)$ -th portion of said data with said n -th encryption key.

13. The decrypting apparatus as set forth in claim 10, further comprising:
10 expanding means for expanding said data.

14. The decrypting apparatus as set forth in claim 13,
wherein said expanding means expands said data after said data is
decrypted.

15. The decrypting apparatus as set forth in claim 10,
wherein said data contain at least one of video data, audio data, and
character data.

16. The decrypting apparatus as set forth in claim 10,
wherein said first portion and said second portion are input from the
same medium.

17. The decrypting apparatus as set forth in claim 10,

wherein said second portion is input from a medium different from a medium from which said first portion is input.

18. The decrypting apparatus as set forth in claim 10,

5 wherein said first portion contains a commercial.

19. An encrypting method using an encryption key contained in an electronic watermark, said method comprising the steps of:

10 (a) generating a first electronic watermark which contains a first encryption key;

(b) inserting said first electronic watermark containing said first encryption key into a first portion of data; and

(c) encrypting a second portion of said data with said first encryption key.

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20. The encrypting method as set forth in claim 19, further comprising the steps of:

(d) generating a second electronic watermark which contains a second encryption key;

20 (e) inserting said second electronic watermark into said second portion before said second portion is encrypted with said first encryption key; and

(f) encrypting a third portion of the data with said second encryption key.

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21. The encrypting method as set forth in claim 19, further comprising the steps of:

(g) generating an n -th electronic watermark which contains an n -th

5 encryption key, where n is an integer larger than one;

(h) inserting said n -th electronic watermark into an n -th portion of said data before said n -th portion is encrypted with an $(n - 1)$ -th encryption key; and

(i) encrypting an $(n + 1)$ -th portion of said data with said n -th
10 encryption key.

22. The encrypting method as set forth in claim 19, further comprising the step of:

(j) compressing the data.

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23. The encrypting method as set forth in claim 22, wherein said data is compressed before said data is encrypted.

24. The encrypting method as set forth in claim 19,

20 wherein said data contain at least one of video data, audio data, and character data.

25. The encrypting method as set forth in claim 19, further comprising the steps of:

(k) outputting said first portion to a medium; and

(l) outputting said second portion to the same medium as the medium to which said second portion is output.

5 26. The encrypting method as set forth in claim 19, further comprising the steps of:

(m) outputting said first portion to a medium; and

(n) outputting said second portion to a medium different from the medium to which said first portion is output.

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27. The encrypting method as set forth in claim 19, wherein the first portion contains a commercial.

28. A decrypting method using an encryption key contained in an
15 electronic watermark, said method comprising the steps of:

(a) detecting a first electronic watermark from a first portion of data;

(b) extracting a first encryption key from said first electronic watermark; and

(c) decrypting a second portion of said data with said first encryption
20 key.

29. The decrypting method as set forth in claim 28, further comprising the steps of:

(d) detecting a second electronic watermark from said second portion

decrypted with said first encryption key;

(e) extracting a second encryption key from said second electronic watermark; and

(f) decrypting a third portion of said data with said second encryption

5 key.

30. The decrypting method as set forth in claim 28, further comprising the steps of:

(g) detecting an n -th electronic watermark from an n -th portion of
10 said data decrypted with an $(n - 1)$ -th encryption key, where n is an integer larger than one;

(h) extracting an n -th encryption key from said n -th electronic watermark; and

(i) decrypting an $(n + 1)$ -th portion of said data with said n -th

15 encryption key.

31. The decrypting method as set forth in claim 28, further comprising the step of:

(j) expanding said data.

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32. The decrypting method as set forth in claim 31,
wherein said data is expanded after said data is decrypted.

33. The decrypting method as set forth in claim 28,

wherein said data contain at least one of video data, audio data, and character data.

34. The decrypting method as set forth in claim 28, further comprising

5 the steps of:

(k) inputting said first portion from a medium; and

(l) inputting said second portion from the same medium as the medium from which said first portion is input.

10 35. The decrypting method as set forth in claim 28, further comprising the steps of:

(m) inputting said first portion from a medium; and

(n) inputting said second portion from a medium different from the medium from which said first portion is input.

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36. The decrypting method as set forth in claim 28, wherein said first portion contains a commercial.

37. A computer program product embodied on a computer-readable

20 medium and comprising code which, when executed, causes a computer to perform a method comprising the steps of:

(a) generating a first electronic watermark which contains a first encryption key;

(b) inserting said first electronic watermark containing said first

encryption key into a first portion of data; and

(c) encrypting a second portion of said data with said first encryption key.

5 38. The computer program product as set forth in claim 37, wherein said method further comprises the steps of:

(d) generating a second electronic watermark which contains a second encryption key;

10 (e) inserting said second electronic watermark into said second portion before said second portion is encrypted with said first encryption key; and

(f) encrypting a third portion of the data with said second encryption key.

15 39. The computer program product as set forth in claim 37, wherein said method further comprises the steps of:

(g) generating an n-th electronic watermark which contains an n-th encryption key, where n is an integer larger than one;

20 (h) inserting said n-th electronic watermark into an n-th portion of said data before said n-th portion is encrypted with an (n - 1)-th encryption key; and

(i) encrypting an (n + 1)-th portion of said data with said n-th encryption key.

40. The computer program product as set forth in claim 37, wherein said method further comprises the step of:

(j) compressing the data.

5 41. The computer program product as set forth in claim 40, wherein said data is compressed before said data is encrypted.

10 42. The computer program product as set forth in claim 37, wherein said data contain at least one of video data, audio data, and character data.

43. The computer program product as set forth in claim 37, wherein said method further comprises the steps of:

(k) outputting said first portion to a medium; and

15 (l) outputting said second portion to the same medium as the medium to which said second portion is output.

44. The computer program product as set forth in claim 37, wherein said method further comprises the steps of:

20 (m) outputting said first portion to a medium; and

(n) outputting said second portion to a medium different from the medium to which said first portion is output.

45. The computer program product as set forth in claim 37,

wherein the first portion contains a commercial.

46. A computer program product embodied on a computer-readable medium and comprising code which, when executed, causes a computer to

5 perform a method comprising the steps of:

(a) detecting a first electronic watermark from a first portion of data;

(b) extracting a first encryption key from said first electronic watermark; and

10 (c) decrypting a second portion of said data with said first encryption key.

47. The computer program product as set forth in claim 46, wherein said method further comprises the steps of:

15 (d) detecting a second electronic watermark from said second portion decrypted with said first encryption key;

(e) extracting a second encryption key from said second electronic watermark; and

20 (f) decrypting a third portion of said data with said second encryption key.

48. The computer program product as set forth in claim 46, wherein said method further comprises the steps of:

(g) detecting an n -th electronic watermark from an n -th portion of said data decrypted with an $(n - 1)$ -th encryption key, where n is an integer

larger than one;

(h) extracting an n -th encryption key from said n -th electronic watermark; and

(i) decrypting an $(n + 1)$ -th portion of said data with said n -th encryption key.

49. The computer program product as set forth in claim 46, wherein said method further comprises the step of:

(j) expanding said data.

50. The computer program product as set forth in claim 49, wherein said data is expanded after said data is decrypted.

51. The computer program product as set forth in claim 46, wherein said data contain at least one of video data, audio data, and character data.

52. The computer program product as set forth in claim 46, wherein said method further comprises the steps of:

(k) inputting said first portion from a medium; and

(l) inputting said second portion from the same medium as the medium from which said first portion is input.

53. The computer program product as set forth in claim 46, wherein said

method further comprises the steps of:

(m) inputting said first portion from a medium; and

(n) inputting said second portion from a medium different from the medium from which said first portion is input.

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54. The computer program product as set forth in claim 46,
wherein said first portion contains a commercial.

10 55. A computer readable record medium on which data has been
recorded, said data comprising:
a first portion into which a first electronic watermark which contains
a first encryption key has been inserted; and
a second portion encrypted with said first encryption key.

15 56. The computer readable record medium as set forth in claim 55,
wherein a second electronic watermark which contains a second
encryption key has been inserted into said second portion, and
wherein said data has a third portion encrypted with said second
encryption key.

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57. The computer readable record medium as set forth in claim 55,
wherein an n-th electronic watermark which contains an n-th
encryption key has been inserted into an n-th portion, where n is an integer
larger than one; and

wherein said data has an $(n + 1)$ -th portion encrypted with said n -th encryption key.

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